DOCUMENT RESUME

ED 165 427 EC 113 491

AUTHOR	Frank, Mary, Ed.; And Others
TITLE	Nutrition and Young Children.
INSTITUTION	Pittsburgh Association for the Education of Young Children, Pa.
PUB DATE	Nov 78
NOTE	37p.
AVAILABLE FROM	Children in Contemporary Society, P.O. Box 11173, Pittsburgh, Pennsylvania 15237 ($8.00 per year; $3.00 back issues)
JOURNAL CIT	Children in Contemporary Society; v12 n1 Nov 1978
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Childrens Literature; Community Programs; *Dietetics; *Early Childhood Education; Eating Habits; Foods Instruction; Handicapped Children; *Nutrition; Special Health Problems; Television Commercials

ABSTRACT

The special issue of the journal contains 12 articles on nutrition and young children. The following titles and authors are included: "Overview--Nutritional Needs of Young Children" (M. Scialabba); "Nurturance--Mutually Created--Mother and Child" (M. McFarland); "Feeding the Special Needs Child" (E. Croup); "Maternal and Neonatal Nutrition--Long Term Consequences" (I. Holzman); "Nutrition and Health Problems in the Child--Diabetes Mellitus, Hypogylycemia and Obesity" (D. Becker and A. Drash); "Involving Children in Food Preparation--A Pathway to Increased Learning and Mastery" (K. VanderVen); "More Effective Nutrition Teaching Through a Process Method--Lifelong Eating Habits Begin Early" (A. Taylor); "Children's Literature" (F. Cohen); "Community Intervention in Federal Nutrition Programs" (M. Lloyd); "The Dire Health Consequences of Television Advertising Aimed at Children" (M. Pauker); "Food Supply--USA" (B. Deskins); and "Their Dismal Condition--Nutrition and Young Children in the Developing World" (J. Dwyer). (SBH)

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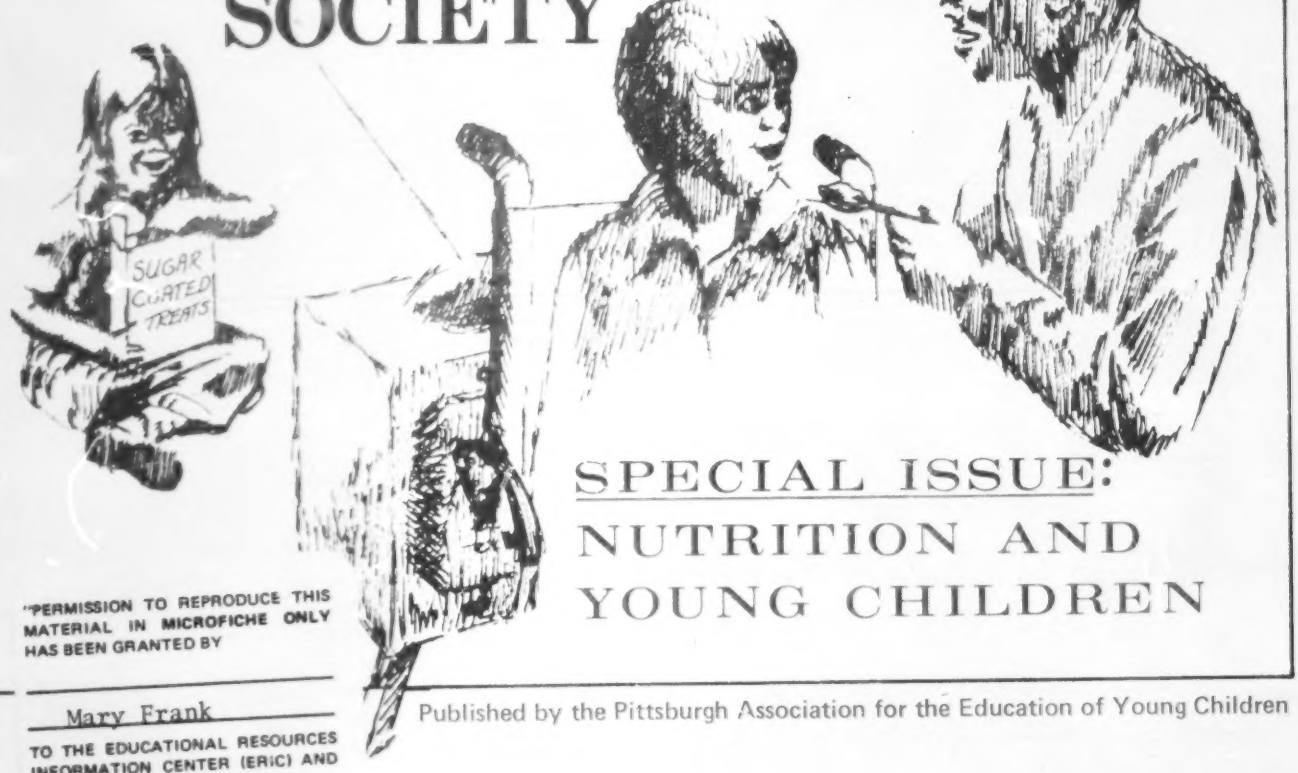

SPECIAL ISSUE: NUTRITION AND YOUNG CHILDREN

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Children In Contemporary Society is a quarterly interdisciplinary journal for professionals and parents devoted to the growth and development of young children in contemporary society.

The policy of this journal is to study various contemporary educational, social, medical, political, and economic issues which directly or indirectly influence the lives of young children. Each publication is organized around a specific issue and includes a collection of interdisciplinary readings which relate to the selected topic.

Manuscripts are welcomed if they have not been previously published. The form and content of a manuscript should follow the form as indicated in the American Psychological Association Publication Manual, 1974 Revision. Send all manuscripts to: **Children In Contemporary Society**, P.O. Box 11173, Pittsburgh, Pennsylvania 15237.

Subscriptions: U.S. $8.00
Canada and other foreign countries $10.00
Back Issues: $3.00
Subscriptions are also available through membership in the organization.

For information on subscriptions and membership to the Pittsburgh Association for the Education of Young Children (formerly the Pittsburgh Area Preschool Association), address all correspondence to: **Children In Contemporary Society**, P.O. Box 11173, Pittsburgh, Pennsylvania 15237.

Selected articles from Volume 8, Numbers 1-4 are indexed in ERIC'S monthly abstract journal *RESOURCES IN EDUCATION*, January, 1976. These articles are available in hardback copy and microfiche which may be obtained from the ERIC Document Reproduction Service.

Selected articles from Volume 9, Number 2 are listed in the *EXCEPTIONAL CHILD EDUCATION ABSTRACTS*, Volume 8, Number 2.

Beginning with Volume 11, Number 1, most issues will be listed in ERIC'S monthly abstract journal *RESOURCES IN EDUCATION* and CEC'S monthly abstract journal *EXCEPTIONAL CHILD EDUCATION RESOURCES*. All articles will be available in microfiche and hardback copy.

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Children in Contemporary Society is published by the Pittsburgh Association for the Education of Young Children. (formerly The Pittsburgh Area Preschool Association)

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Introduction

From 1964 to 1966, I taught foods and nutrition to grades seven through twelve. A nutritional analysis of weekly food intake revealed only a handful of these students received recommended dietary allowances despite the finding that the needed food substances were readily available.

Since that time, the literature has been "polluted" with advice, facts of fallacy on diets recommending particular levels of fat, cholesterol, protein, salt, additives, etc. There is no dispute that nutrition affects every aspect of growth and development over the lifespan of both sexes, of every race and of all cultures, but the practicability of literature to date has been questionable.

Dr. Ronald M. Deutsch, in speaking to the 54th Annual Meeting of Pennsylvania Home Economists last year (April 29, 1977), shared that over 50% of the Americans are worried about weight at any given time, yet fewer than 10% ever succeed in losing weight and keeping it off. For those interested in dieting, there are numerous diets that are available; some are nutritionally sound and others are nutritionally dubious. Dr. Deutsch's analysis of one diet revealed that if a person weighed 128 pounds, he or she would lose one pound every fourth day and in 14 months would disappear completely!

The topic of nutrition is timely; the majority of Americans are concerned, yet ineffective in their own dietary habits, and an overview of literature to date reveals the need to differentiate between fact and fallacy on current nutritional data.

For these reasons, plus the high esteem our PAEYC (Pittsburgh Association for the Education of Young Children) journal has earned over the past years, these introductory comments for this special Nutritional Issue Related to Young Children, are written with the greatest pleasure and pride.

Virginia Logue Richardson, President
Pittsburgh Association for the Education of Young Children, '77-'79.

A TRIBUTE

Dr. Fomon is noted for his distinguished work in the areas of teaching, research and publication of infant and child nutrition. In addition to teaching in the University of Iowa Medical School, Dr. Fomon developed and directs an "Intensive Course in Pediatric Nutrition" for health care professionals. Dr. Fomon is the author of the well-known text *Infant Nutrition* as well as numerous articles (see p. 26 for a selected list of his publications). He has served on various governmental committees and his writings have appeared in federal publications. The Borden Award of the American Academy of Pediatrics was given to Dr. Fomon in 1966.

Born in Chicago, Illinois on March 9, 1923, Dr. Fomon completed undergraduate work at Harvard College and medical studies at the University of Pennsylvania. In 1954 he joined the University of Iowa's College of Medicine, specializing in pediatrics.

"In the United States and other technically advanced nations, problems of gross malnutrition among infants and small children are infrequent. We have not yet eliminated iron deficiency, dental caries or obesity, but much knowledge about means of eliminating at least the first two of these disorders is available. Education regarding preventative measures is needed.

Having dealt successfully with most problems of gross malnutrition, we now have the opportunity to explore the immediate and later consequences of nutritional status and feeding during early life. A few of the many remaining questions are the following: Does iron deficiency (or other mild deficiency) influence learning ability? To what extent is obesity in infancy related to specific feeding practices? Do eating habits established during infancy contribute to subsequent development of obesity? Does diet during childhood contribute to heart attacks in the adult? These and similar questions will keep nutritional researchers busy for many years."

—Samuel J. Fomon, M.D.
For this issue of *Children in Contemporary Society.*

Overview: Nutritional Needs of Young Children

BY MARY ANN SCIALABBA

Meeting nutritional needs during early childhood involves the appropriate use of food not only as a source of energy and of essential nutrients for growth and regulation of body processes but also as a medium through which interpersonal and cultural growth occurs and the foundation for lifelong eating behavior is laid. Thus, not only must the nutrient needs for the various stages of development be addressed but also the type of foods chosen to provide those nutrients, the time and method of introduction of those foods, and the attitude of the caregiver.

The fact that each developmental stage requires certain modifications in feeding and in nutrient requirements makes it usual to discuss nutritional needs using certain circumscribed chronological age periods as the point of demarcation. It should be remembered, however, that physiological age is the better determinant and that because of human variability each individual child will not necessarily fit into the stages and needs as described. Individual differences must always be considered.

Nutrition through the life cycle has been described as a circular process, a continuous influence with one generation passing the effect on to the next (Cronk & Howard, 1978).

Mary Ann Scialabba, R.D., Ph.D.: Associate Professor of Nutrition, School of Health Related Professions, University of Pittsburgh, Pittsburgh, Pennsylvania.

Nutrition plays an important role in the outcome of the developing fetus. The notion that the fetus is able to obtain the nutrients it needs from its mother, much like a parasite, is no longer accepted. Evidence is available that intrauterine growth failure can occur following undernutrition in the mother. There appear to be critical periods, both pre- and post-natal, when the brain and other vital organs are especially vulnerable to undernutrition. Protein deprivation in the infant before and after birth has been reported to result in brain cell deficiency and mental impairment (Winick & Rosso, 1969).

During fetal life the food supply is that which is transferred from the mother's blood stream to that of the fetus through the placenta. The nutritional past of the woman, her preconception, and, indeed, her lifetime diet as well as her prenatal diet are therefore of prime importance.

Current practice specifies that weight gain in pregnancy should be closely monitored with the objective of achieving an average gain to 24 pounds, with the pattern of weight gain most important. A gain of 1 to 2 kilograms during the first trimester followed by a gain of approximately 0.4 kilogram/week throughout the last two trimesters is the recommended pattern. Limiting the weight gain increases the risk of a low birth weight infant.

At birth, the sucking reflexes are the infant's mechanism for obtaining food. Because of the immaturity of the mouth and the rest of the digestive tract, breast milk or substitute formula is the sole food. It is recognized by most professionals that breast feeding has certain advantages and should be encouraged as the preferred choice of feeding for the mother's and baby's early feeding experience (Committee on Nutrition, American Academy of Pediatrics, 1976). Yet a family's life style, mother or baby's health, and cultural values must also be recognized as determinants of the choice of method of early feeding. In the absence of any direct evidence of harm from bottle (formula) feeding so long as a safe water supply and sanitary conditions are available and no history of allergy exists, the choice is left to the individual family.

For the most part, breast milk or an appropriate formula with supplementary vitamins D and C can provide for the rapid growth of the first few months of life. Energy needs of approximately 117 calories per kilogram of body weight and protein needs of 2.2 grams per kilogram of body weight are recommended for the first 5 months of age. These are reduced to 108 calories per kilogram and 2.0 gram protein per kilogram during the last half of the first year.

At 3½ to 4 months of age, the infant's tongue thrust reflex begins to diminish as do the birth stores of

iron. These events are indicators that the more solid, strained baby foods can be introduced. There is evidence that growth and development occur with healthy babies if solid food is delayed for as long as 5 months, and there appears to be no advantage in introducing solid foods earlier (Fomon, 1974). Nevertheless, social customs at present seem to favor much earlier introduction of foods. The major objection, other than cost to early feeding, is the possibility that it is likely to encourage overfeeding and unsound food habits (Fomon, 1974).

The sequence of solid food introduction will vary, but the usual is cereal, then fruit, followed by vegetables and meats. These should be introduced one at a time, in small amounts, and when the infant is neither ravenous nor satiated. Texture can be introduced into the diet near the end of the fifth month with small amounts of mashed table food. More table food can be added as the child develops tongue mobility, the lateral motions of the jaw commence, and the primary teeth appear (by 7 months). It is essential to observe these signs of developmental readiness for texture. If the critical period of readiness passes, it may be difficult to introduce texture at a later time. Sitting balance and eye-hand coordination signal readiness for finger feeding and approximation of the lips to the rim of the cup signal readiness for cup drinking and the gradual weaning from the bottle. While there is no specific age for weaning, it should be a gradual process that can be completed between 1 and 2 years of age.

By the second birthday, most children are nutritively mature and physiologically capable of chewing and utilizing the food served to the family. Usually by the time the child has 12 to 16 teeth, he can masticate his food well and feed himself. This is a transition from feeding himself part of the meal and being fed the rest to becoming independent by self-feeding. The main issue at this time is that toward the end of the first year, the infant's appetite begins to wane as the rate of growth slows. Energy requirements decrease to 90 calories per kilogram of body weight, but emphasis is still required on protein intake. The recommendation is 1.5 gram protein per kilogram. Other nutrients are generally met with a varied diet of milk, meat or substitute, fruit, vegetables, and cereal products. During this period caregivers need to understand that the characteristically small, finicky appetite is a part of this stage in development. Overreacting by forcing, bribing, or punishing only reinforces the child's negative behavior. Reasonable limits on the child's behavior while allowing some freedom of control should be maintained. Small servings are needed so as not to overwhelm the already limited appetite. Social expectations at the family dinner table should not be made since still somewhat uncoordinated fine motor control makes spills a common occurrence.

In spite of the reduction in appetite and erratic consumption of food, preschool children will consume an appropriate nutrient intake if simply prepared foods that provide a balance of nutrients are presented in a relaxed setting.

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NURTURANCE - MUTUALLY CREATED MOTHER AND CHILD

BY MARGARET B. McFARLAND

To survive and grow, the newborn person needs to receive nurture from the environment to which he has been born. After delivery, most women have strong biological and psychological needs to nurture and to be close to the children they have delivered. Thus a mother's feeding of her infant fulfills deep needs in her life and is, of course, essential for the child. The baby has his or her own biological rhythms and has a mouth well developed for sucking; in response to inner hunger pangs, infants cry. Thus the baby is equipped to be an agent of his own feeding experience, a partner with his mother. The mother responds to her baby's hunger cries with her capacities for loving and brings the child to her breast or provides the bottle. Little by little the mother and baby develop feeding adjustments that are mutually gratifying. For example, when a baby is breast fed, in only a few days after birth, he or she turns the head toward the breast when held close to the mother's body. Many nursing mothers tell of how they feel the let down of their milk at the sound of the baby's hunger cry so that their clothing is often wet with milk before they can prepare themselves for nursing, mother and child responding to each other. A mother's responsiveness to her child's needs for food is regulated by love. If the mother's own earlier development has not supported her well in the emergence of motherliness in her personality, it is often difficult for her to be consistently available to her baby's needs; yet as she experiences the nurturant mutuality with her child, her own growth may be enhanced in such a way that the feeding relationship becomes more gratifying for both mother and child. If the mother has caring persons invested in her needs, this growth of motherliness is most likely to take place. Motherly love is an essential component of a woman's capacity to be responsive to her baby's needs and ways.

A baby's experience of having his hunger gratified in a consistent cyclical way initiates impressions of goodness within so that as the child grows he has the foundation for attitudes toward self as good -- good thoughts within, good feelings, as well as a good body. The sense of trust and pleasure in that which is outside the self has its beginnings in the child's awareness of food as coming from his mother. It is not possible to have perfection in the mother-child feeding relationship so that painful hunger within and delayed fulfillment from without means that a sense of inner and outer badness is combined in all human awareness with the sense of inner and outer goodness. The outcome of an optimal mother-child feeding relationship is mutual trust; that is, trust in each partner, self and other. It is, of course, Erik Erikson (1950) who brought to our knowledge the importance of the quality of the early weeks and months of life for a lifetime of a trusting attitude. Therese Benedek (Anthony & Benedek, 1970) refers to this outcome as confidence -- confidence in self and other.

As the child grows and has brief times of waiting for food, his awareness grows of his mother as a partner in obtaining gratification. This fosters his reaching out with his senses, listening for his mother's footsteps or the sound of her voice, following her with his eyes, moving his extremities toward her. If she takes him up in her arms, he may stop crying because he has begun to associate past experiences with the present; in other words, memory has become comforting. The child may also provide self-comfort by sucking his fist or thumb. He is becoming somewhat less dependent.

Some women feel sad as their babies grow more independent. Those who especially enjoy the tender dependent intimacy of the child's earliest feeding times may be reluctant to have the baby take over holding his own bottle instead of clasping her finger while she holds it. Weaning from the breast involves a sense of loss for many mothers even though they look forward to increased freedom. Yet, for most mothers there is a pride in

Margaret B. McFarland, Ph.D.: Associate Professor of Psychology, Emeritus, Department of Psychiatry, School of Medicine, University of Pittsburgh, Pittsburgh, Pennsylvania.

supporting the child's growing capacities to participate actively in his own feeding. Her pride and support are important to the child's pleasure in self-feeding.

By the time a baby is 1 year old, he is able to sit in a high chair and feed himself solid foods and hold his own bottle or training cup. He tends to make a mess of his hands and face as well as of the high chair tray and the floor under the chair. His enjoyment of food is enhanced by varied tastes and textures, colors and smells, provided that his adults are not disgusted by his messiness or unduly restrictive. The acceptance of food as well as the giving of food is a way of expressing love. By the same token, closing one's mouth and refusing to take what is offered may be an expression of rage that persists throughout life. Thus, as a baby develops increased striving for autonomy, gentle giving and essential support, such as providing appropriate feeding accessories and food in manageable forms, fosters his healthy striving to become a person in his own right.

Encouraging dependence in feeding may deprive the child of the energy to develop his independence in other ways as well. Food can continue to be fused with the meaning mother has for him, so that a child may not progress in differentiating between mother and food. Some children, when separated from the mother, are unable to eat. It was many weeks after he started to go to the Day Care Center before Brian could eat food provided there. When separated from the mother, some children eat voraciously as though to take in food internalized the mother. After being separated from his loving, nurturant mother at the age of 10 months, George ate with his hands enormous quantities of food but gave up playing and other forms of intake through his senses. Not until months after he was reunited with his mother more than a year later was George able to turn his interest to looking at, listening to, and feeling objects in his environment, to reduce his voracious intake of food, and to begin to find pleasure in play. Because his mother grieved about their separation and could empathize about his difficulties when they were reunited, George's eating eventually came to take on normal proportions in his range of behavior, but he also became eagerly interested in learning about the real world around him. When he went to first grade he was competent in learning.

Spitz (1965) pointed out that visual perception and infant feeding are forever associated because as the infant takes in with his mouth either from the breast or bottle his eyes come to focus on the mother's body so that he takes in wich his eyes as he takes in with his mouth. The pleasure of the assuagement of hunger for food, by association, contributes to the pleasure of seeing and visual attentiveness. To take in food, the baby is attentive to sucking. We commonly acknowledge this association by the phrase "food for thought," referring to our cognitive activities.

It is natural that children as well as adults have food preferences. Preschool children who are loved members of ethnic groups often have deep attachments to the traditional foods of their families. Italian children may prefer pasta and tomato-meat sauces over all other foods; Black children tend to eat greens and fresh fruit with greater enjoyment than white children do. Polish children may consider cabbage rolls, hruszczyki and puschki very special foods. But there are other kinds of preferences. When Paul's mother brought him to the day care center, she explained to the teacher that his favorite food was mashed potatoes. The first day after Paul's beginning at teh day care center, the teacher asked the cook to make mashed potatoes so that Paul would have something he was sure to enjoy. Paul looked eagerly at his mashed potatoes as the teacher served his plate, but then sat sucking his thumb for some time. At last, he took his wet thumb, imbedded it in his mashed potatoes, then sucked the potatoes from his thumb. Again his thumb went into the mashed potatoes and again the sucking of his thumb until all of his potatoes were gone. Not until I watched Paul's mashed potato behavior had I thought of the possibility that white mashed potatoes could stand for milk in a child's preference, and yet most children and adults enjoy ice cream or some other food made of milk products.

Victor had been abruptly weaned when his mother had to be hospitalized when he was 7 months old. Victor never accepted a bottle as a substitute for the breast and refused milk from a cup. Not until he was 4 years old did he drink milk in any form. But at 4 when he was very competitive with his father, he poured milk into a coffee cup, dipped a graham cracker in it, and sucked the graham cracker. For days his milk in a coffee cup and graham cracker ritual continued; finally he said with a proud lift of his head, "My dad dunks his toast in his coffee."

That individual food preferences are common among human beings is based not only upon differences in foods themselves but also upon the experiences inherent in our life histories. For each individual, food, being fed or feeding others, has unique affective meaning that has continuity from infancy throughout life. In spite of this continuity, there are also changes that occur as development progresses from phase to phase, modifying both self and relationships with others.

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Feeding the Special Needs Child

BY ELIZABETH H. CROUP

The basic nutritional needs of the handicapped child are the same as for the normal child. The variations of the diet can be the same as for normal children with such conditions as diabetes, obesity, underweight, nephritis, nephrosis or with specific handicapping conditions such as myelomeningocele, cerebral palsy, or Down's Syndrome.

Myelomeningocele

Children with myelomeningocele, more commonly called spina bifida, have varying degrees of involvement depending on the part of the spinal cord affected. The higher the spinal cord involvement the less function and more involved the child. The less function the child has, the fewer calories he needs.

Obesity

Obesity is prevalent in these children. Since their basic caloric needs are low, reducing is difficult. Preventing obesity by educating the parents of these children while they are infants is desirable. This is helpful to the parent. These children are poor eaters and vomit easily. Most parents think children need more food than they do. A low calorie, nutritionally adequate diet is recommended. For the young child, three meals and an evening snack are suggested. As the child grows older the evening snack is eliminated. If the child still wants a snack, celery, radishes, or other low calorie foods are suggested. High caloric foods and candy should never be used for rewards. Toys, books, reading to the child, or taking him for an outing are more acceptable rewards than food. Children should be encouraged to eat all nutritious foods; introduce new foods to the child when the family is eating them. A pleasant atmosphere makes for better eating.

The suggested meal pattern for children who have a tendency to gain excessive weight such as spina bifida, spastic cerebral palsy and Down's Syndrome.

Suggested Breakfast	Suggested Lunch	Suggested Dinner	Bedtime Snack
1/2 cup juice 1/2 cup cereal or 1 egg 1 slice of toast with butter 1/2 cup skim milk	2 tablespoons meat, cheese, fish or 1 tablespoon peanut butter 1/3 cup fruit 1 slice of bread 1/2 cup skim milk	2 tablespoons meat, cheese, fish 3 tablespoons green or yellow vegetables 3 tablespoons veget- able or fruit 1 slice of bread 1 teaspoon butter 1/2 cup skim milk	1/2 cup skim milk

Figure 1: Taken from *Meal Time! Happy Time! A Guide for Parents.*

Cerebral Palsy

Cerebral palsy presents two nutritional conditions: an obese condition in the spastic cerebral palsy where the movements are limited and an underweight condition in the athetoid where involuntary motor activity requires increased calories. The spastic child, therefore, requires a low calorie diet. He must learn to live with this as his inactivity makes his caloric needs less. He must be kept at normal weight since ambulating becomes more difficult with increased weight. Here again, parent education at an early age will keep the child's weight normal.

The increased motor activity of the athetoid requires more calories than normal. According to Phelps (1951), a 17-year-old cerebral palsy boy needs 6,000 calories daily. The required daily average for a normal 17-year-old is 3000 calories. Constipation is a common problem with cerebral palsy children. Since starch is known to aggravate this condition, it shuold be kept at a minimum. Fortunately, these children like to eat. Three meals plus three between-meal feedings are needed for the teenager. Three meals and an evening feeding is adequate for other age groups.

Head-Injured

The head-injured child requires individualized diet planning depending on the severity of the injury and the rate at which he progresses.

Down's Syndrome

Down's Syndrome children tend

Elizabet H. Group, B.S., R.D.: Dietary Consultant, Home For Crippled Children, Pittsburgh, Pennsylvania

to be short-statured for their age (Pryor & Thelander, 1967); therefore, their height rather than age should determine their desired weight. Due to their relative inactivity, calories needed are below the normal requirements.

Arthritis

Unless there is a mechanical problem with the jaws, arthritic children do not require any special diet. When this problem occurs, it is the consistency of the food that is adjusted to meet the child's ability to eat.

Mechanical Needs

Treating the mechanical impairment of handicapped children is more time-consuming and must involve more people than meeting the nutritional needs; these are children who cannot feed themselves or children who do not have the oral mechanisms to properly chew and swallow their food. For children with these mechanical problems the team approach has been used at the Home for Crippled Children since the late 1940s. No guidelines were available at that time so with trial and error the nurse and the dietitian developed their own. As the staff at the Home grew, so did the team; the more team involvement, the more effective were the results and the more children helped in a shorter period of time. Today the team includes the coordinator, pediatrician, speech therapist, physical therapist, occupational therapist, nurse, child care worker, dietitian, and psychologist. Increasingly, the parents are being considered as part of the team. All these people working together are concerned with the total digestive process – eating, digesting, and excretion of food – along with the child and parents' attitude toward food. Food intake unless it is digested is wasted.

When a child is admitted, the pediatrician determines if there are any physical problems in the mouth and digestive tract that could cause problems. The speech therapist

screens for oral pathological problems. The occupational therapist screens for self-feeding. The speech therapist, physical therapist, and occupational therapist do the actual feeding. The occupational therapist does the teaching for self-feeding. The dietitian provides for the nutritional needs of the child by using a variety of foods in the proper consistency to provide the need to stimulate the child to chew. With cerebral palsy children, sucking, biting, tongue thrusting, chewing, or swallowing can present problems. A three-point jaw control (the Bobath Method) is used by our therapists to keep the head up, reduce jaw movements and tongue thrusting, and aid in lip closure.

The child with a cleft palate cannot suck or swallow properly. Vomiting is common and comes out the nose due to inability to swallow. In the infant, sucking is limited because passage of air through cleft makes vacuum formation impossible. Specially designed nipples and plastic bottles are used. The formula should be thickened with cereal as the infant can handle this better. If a nipple cannot be used, the infant is spoon fed or an asepto syringe is used. Once more solid food is added to the diet, the infant is easier to feed. Older children are annoyed by acidic and spicy foods and gooey, pasty foods get stuck. Poor teeth are frequently present so chewing problems cause the child to dislike nuts, fresh fruits, and vegetables. Eating for these children is always a slow process.

The goals for feeding each handicapped child are different. They are set by the therapists treating the child. Some goals are met but at times goals have to be geared downward due to illness or operations. The ultimate goal would be to have each child eat a regular, textured, adequate diet by self-feeding but we know that this is not always possible. The therapists attempt to have each child reach his maximum potential, keeping in mind the family situation. A mother with six children cannot be expected to feed one child for one hour at each meal. The feeding program must be designed with a realistic time frame to insure that the child receives adequate nutrients for growth.

Basic Daily Needs

The nutrition needs for preschool children is based on the Basic Four Food Group.

	Ages 1-3	Ages 4-6	
Meat Group			
Meat, poultry, fish, organ meats, or meat substitutes	2 servings (1 oz. each)	2 servings (1½ oz. each)	Substitutes for the protein of 1 oz. meat: 1 egg, 1 oz. cheese, ¼ cup cottage cheese, ¼ cup peanuts, 1/3 cup other nuts, ½ cup cooked dry peas or beans, 2 tablespoons peanut butter
Milk Group			
Milk (whole, skim, dry, evaporated, buttermilk) and other dairy products	2 cups	2 cups	Substitutes for the calcium of 1 cup milk: 1 cup yogurt, 1-1/3 cup cottage cheese, 1-1/2 cup ice cream, 1-1/4 oz. (1/3 cup grated) natural cheese, 1-3/4 oz. process cheese.
Vegetable-Fruit Group			
For Vitamin A: deep yellow-orange or very dark green vegetables For Vitamin C: citrus fruit, melon, strawberries, broccoli, tomatoes, raw cabbage	4 servings or more (3 tablespoon each)	4 servings or more (3 tablespoon each)	Eat one vitamin C source daily, one high vitamin A source at least every other day. Other fruits and vegetables fill out this food group.
Bread-Cereal Group			
Whole grain or enriched bread, cereal, rice, pasta	3 servings	4 servings	Very active children, teens, adults and athletes need more for energy. A serving is 1 slice bread, 1 roll, 1/2 cup cooked cereal products, 1 oz. dry cereal.

Information on feeding handicapped children is available from the following sources:

1. County Health Departments
2. State Health Departments
3. The American Dietetic Association, 430 Michigan Avenue, Chicago IL 60611
4. The Dairy Council in your Community
5. The Federal Health and Welfare Department

Special Acknowledgments

To the Child Care Workers, Dietitians, Nurses, Occupational Therapists, Pediatricians, Physical Therapists, and Speech Therapists who have worked at the Home For Crippled Children since 1947.

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Maternal and Neonatal Nutrition – Long Term Consequences

BY IAN R. HOLZMAN

Let us pose a simple question: "If we starve a pregnant mother, will her baby be affected?" Most of us would answer in the affirmative without giving it more than a moment's thought. But what does that question actually imply? What effect are we talking about? Are we to look for stillbirths, abortions, malformations, or decreased in physical or intellectual stature? It is surprising to realize that the possibility of a connection between the nutrition of a pregnant mother and the eventual outcome of her offspring has only recently been extensively studied.

A reasonable initial postulate would be that starving mothers produce smaller infants. The studies conducted on the offspring of mothers pregnant during the famines in Leningrad and Holland clearly demonstrated an adverse effect on infant size at birth. The infants, on the average, weighed one-half pound less at birth, and their placentas were also measurably reduced in weight. But when and how much starvation at what time in pregnancy is necessary to lead to such an outcome? The elegant investigation of the Dutch famine by Zena Stein and Mervyn Susser (1975) allows us to answer both of those questions. It appears that a severe level of starvation is needed to produce an appreciable effect on growth variables such as weight and height. The women in Holland were probably ingesting much less than 1500 calories per day – less than one half the recommended amount. Interestingly, the effects on growht could only be seen in the offspring of women starved during the third trimester of pregnancy. The data from other studies of human nutrition during pregnancy are less conclusive since it is difficult to reproduce such consistent malnutrition on a major scale. A study in Guatemala (Lechtig, Habicht, Delgado, Klein, Yarbrough & Martorell, 1975), in which mothers were given a nutritional supplement during pregnancy, demonstrated an increase in birth weight of their infants.

Animal research directed at the same general questions has confirmed the human data. As is often the case, the various animal models have allowed reserachers to investigate the same problems in much greater detail and with much greater manipulation of diet. Changes in outcome have been produced by dietary restriction *prior to* as well as *during* pregnancy. With an animal model, as will be discussed later, it is also possible to assess the interaction of maternal starvation during pregnancy and infant starvation postnatally.

Accepting the fact that nutrition during pregnancy plays a small role in determining physical size, it is reasonable to ask whether it might influence measurable change in intelligence. Unfortunately, to adequately answer this we must consider some complex animal and human research. Intelligence and behavior are difficult to measure since, unlike physical size at birth, they are partially determined by the child's environment. Subtle changes in maternal behavior caused by poor nutrition might have a substantial effect on subsequent infant and child development. In order to avoid some of these difficulties, scientists have looked for effects of maternal nutrition on various physical and biochemical changes in the infant's nervous system.

Nervous tissue is composed of more than one type of cell. The actual nerve cell is involved with transmission of the message, while a supporting cell (glial cell) is essential for the normal arrangement and integrity of the nervous system. The brain is composed of a number of separate subdivisions (the cerebrum and cerebellum are examples), each responsible for a different function. Nervous system development *in utero* proceeds along an orderly course with different subdivisions and cells developing at different times. The order and rate of development are specific for each animal species. Among all species, though, development proceeds through two main processes: first there is an increase in the number of cells (either nerve or glial) and then there is an increase in the size of the cell.

Ian R. Holzman, M.D.: Assistant Professor of Pediatrics, Obstetrics and Gynecology, University of Pittsburgh School of Medicine, Magee-Womens Hospital, Pittsburgh, Pennsylvania.

These are referred to as hyperplasia and hypertrophy, respectively. To investigate brain growth one must know what part of the brain is developing at each stage of gestation, what cells are increasing, and also whether they are increasing in number or size.

In order to tie together various species differences, a concept known as the "critical or vulnerable period" of development has been proposed. It is a period of maximal velocity of growth when an insult such as undernutrition should have its greatest effect. Notice, though, that this concept does not make reference to cell type or brain area. Infant rats have a critical period for brain growth after birth during suckling. Nutritional deprivation during that short phase will lead to a decrease in the total number of brain cells (primarily, though, the supporting cells). In the human, the critical period begins in the few months before birth and extends nearly 18 months after birth. But, just as in the rat, this is a period of maximal glial cell growth, while nerve cell growth is maximal during the second trimester of pregnancy. If an absolute decrease in the number of nerve cells is a critical factor in decreased intelligence, then nutrition deprivation during the second trimester would be dangerous for the human. If, on the other hand, a lack of glial cells is more important, then later undernourishment would be more critical. It should also be important to know which areas of the brain are developing during these periods. It seems reasonable to suspect that experiments in animals, which rely on various primitive senses such as balance and smell, are difficult to translate to the human who relies more on cognitive ability and hence his cerebral cortex.

Given the complexities of this brief review, we are still left with a question: "If we starve a pregnant mother, will her baby be left with an intellectual or behavioral deficit?" In animals, starvation of the mother during pregnancy and of the infant after delivery can produce developmental delays, changes in activity and excitability, and changes in learning ability. These can be magnified if the duration of starvation includes the pre-pregnancy period. These studies have also assessed the various changes in brain weight and nerve cell number and are the source of much of the present interest in nutritional deprivation. An especially interesting study by Zamenhof, Marthens, and Grauel (1971) has shown that the first-generation offspring of protein-restricted maternal rats themselves produce offspring with decreased cerebral weight and cell number even if their diets were normal during pregnancy. Could this be an effect of nutrition or mother-child interaction?

Research into the human correlates of the animal studies is more difficult to interpret. Winick (1969) has measured brain weights and cell numbers in infants who have died of severe malnutrition over the first year of life. These infants appear to have fewer brain cells, suggesting that inadequate nutrition during the critical phase could be deleterious. But, none of the studies can really answer the unknown of *in utero* malnutrition on a similar group of postnatally starved infants. Must an infant have inadequate *in utero* nutrition to be affected by postnatal starvation? The study of the Dutch famine (Stein, Susser, Saenger & Marolla, 1972) offered some insights into this question. The children of mothers starved during their pregnancy appear to have normal intelligence at age 19! Prenatal nutritional factors, taken alone, might not be a major determinant of intelligence.

Can we reach any firm conclusions concerning nutrition, brain cell development and intelligence? The answer must be "Yes" and "No"! Nutritional manipulation in animals can produce measurable changes in a number of physical and biochemical brain factors. These animals do have differences in activity, coordination, and intelligence. Primate and human findings are less conclusive. There is little doubt that severe malnutrition prenatally *and* postnatally will lead to measurable changes in brain cell number and other biochemical indices. What is unknown is how these "test tube" changes relate to intelligence. Are decreases in the number of supporting cells critical to human function and is the damage irreparable? Are other subtle physical and biochemical changes in various parts of the nervous system relevant to differences seen on psychological testing? And, most importantly, how does one take into account the interaction of the human infant with the quality of the environment which is so stultifying in a malnourished population? My own bias is to believe that the human nervous system is *relatively* resistant to serious damage from maternal malnutrition during pregnancy. Postnatally, prolonged malnutrition, especially if coupled with prenatal insults, probably will adversely affect eventual performance. It is likely, though, that postnatal environmental factors are as important as nutrition in allowing an infant to achieve full genetic potential. Given a child who is poorly nourished, it is most difficult to encourage his or her interaction with a stimulating environment. This alone, regardless of brain cell number or size, should impel us to afford our children optimal nutrition.

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Nutrition and Health Problems in the Child:

Diabetes Mellitus, Hypoglycemia and Obesity

BY DOROTHY J. BECKER AND ALLAN L. DRASH

The objectives of nutritional management of the child with health problems of any nature are to supply adequate substrates for normal growth and development. In addition, certain health problems can be more successfully handled with dietary control while in others diet is the only available form of medical therapy. Dietary therapy is particularly important in disorders of energy homeostasis. Of these, obesity is the most common but the least often recognized and treated. Diabetes mellitus is probably the best known of these disorders, and good nutritional therapy is a cornerstone in the treatment of these children. At present, hypoglycemia is probably the least common and least understood of these disorders. Frequently, dietary control is the most successful form of therapy. A major consideration in designing dietary therapy for children is to interfere as little as possible with their daily life and particularly the relationship with their peers. Thus, dietary manipulation should be as unobtrusive as possible in terms of peer contact.

Dorothy J. Becker, MB., BCH. F.C.P. (Paed), Assistant Professor of Pediatrics, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania

Allan L. Drash, M.D.: Professor of Pediatrics, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania

Diabetes Mellitus

In childhood, this is, in the majority of cases, due to insulin deficiency. Maturity-onset diabetes, which is the adult form of diabetes and associated with obesity, occurs only rarely in children, and its nutritional therapy cannot be compared with that of insulin-deficient diabetes.

There are several aims in the nutritional management of the child with diabetes mellitus: (a) Total nutritional adequacy – the diet must meet the requirements of an active and growing child supplying adequate calories, protein, minerals, vitamins and fatty acids. (b) Metabolic control – a stable diet with proper distribution of calories should aid in the achievement of good control of blood glucose fluctuations preventing both excessive hyperglycemia and hypoglycemia. This is achieved by the selection of food sources with limitations of "empty calories" mainly from mono and disaccharides, e.g., glucose and sucrose. For many years, carbohydrates in the diet of diabetics was restricted. It is now shown that carbohydrates as starch provides one of the best sources of calories with no adverse effect on the blood sugar, unless the total caloric intake is excessive. However, mono and disaccharides, particularly as refined sugars, are rapidly absorbed inducing a marked increase in blood glucose and as a result increased glucose and thus calorie loss in the urine. Metabolic control can also be achieved by a distribution of meals throughout the waking hours of the day as three meals and three snacks in the younger child and three meals and two snacks in the older patient over ± ten years. The snacks should be midmorning, midafternoon and before bed. (c) Control of blood lipids – hyperlipidemia is a known concomitant of poor control in the diabetic who is at greater risk for developing hypercholesterolemia and hypertriglyceridemia than the general population. As hyperlipidemia is a major risk factor for the development of atherosclerotic cardiovascular disease, the control is mandatory in order to decrease morbidity and mortality from cardiovascular disease. This can be achieved by decreased dietary intake of saturated fats and cholesterol in the face of adequate insulinization. Our diet consists of fat intake of 30% of the total calories with a reversal of the usual ratio of polyunsaturated/saturated fats in the average USA diet from 0.3 to 1.2. Fats from animal sources are reduced and supplemented by fats derived from corn oils and other vegetables. Cholesterol is limited to ± 250 mg/day. It means that the source of protein from usual animal sources, e.g., beef, ham, and bacon, should be decreased in favor of lean meat, e.g., fish, poultry, and veal. (d) Avoidance of obesity – calorie restriction is not part of the usual limitations in the average child with

diabetes. However, it is necessary in the presence of excessive weight gain. Obesity makes diabetes of all kinds more difficult to manage and is also usually associated with hyperlipidemia. (e) Prevention of hypoglycemia – the reason for hypoglycemia in the child with diabetes is more often too little food due to skipping or delaying a meal rather than insulin excess. Regular food intake is essential. Often an extra snack is necessary before a period of exercise if this is not soon after a regular meal. The treatment of hypoglycemic symptoms depends on their severity. If mild, food consisting of a starch is preferable. If severe, a rapidly absorbed simple sugar, e.g., fruit juice or sugar, is necessary but should be backed up by a longer-acting starch to prevent recurrence of symptoms.

In the child, the concept of diabetic diet should be replaced by that of food planning and healthy eating. We have found that unless obesity is a problem there is little place for calorie restriction. When the appetite is allowed to control intake there is less chance of hypoglycemia, and it compensates for calorie loss in the urine. What should be limited is irregular eating or eating between meals without a specific reason. Our recommendations are a diet of 55% carbohydrates, 30% fat, and 15% protein. About 70% of the carbohydrate calories are from starch with only 30% from simple sugars, i.e., lactose, fructose, and sucrose. The children are given guidelines for exchanges of one food for another and encouraged to keep the proportions similar at each meal. This system does allow for the occasional intake of plain cake, cookies, or ice cream in limited amounts.

Obesity

The cause for obesity is the intake of more calories than the body uses. This is due to excessive food intake usually associated with decreased energy expenditure by exercise. Identifiable medical causes for this situation are rare but need to be excluded in any grossly overweight child. The only known therapy for obesity is reduction of calorie intake aided by increased energy expenditure by exercise. This requires will power, which many children do not have, and family support. As the family is usually also obese, it requires restructuring the whole family's eating habits. Patients must recognize that even what seems to be minor "cheating" on the diet amounts to a significant accumulation of excess calories. Crash dieting especially in the child in an uncontrolled situation is not advisable and may even be dangerous. Weight loss should not be achieved at the expense of growth failure. Thus sufficient calories, vitamins, minerals, and proteins should be supplied for growth. This should be given as three meals per day as a high protein diet with the total calories calculated according to age, weight, and activity. At least 1.5 grams protein/kg weight must be allowed. As these patients usually drink large quantities of sugar-containing drinks, beverage and milk intake must be taken into account. Drug therapy has not been shown to be beneficial, even as a psychological crutch, and all medications have untoward side effects. We feel strongly that they should be avoided. If necessary, psychological counseling should be advised.

Hypoglycemia

This is fairly common in preschool children. Documented hypoglycemia is uncommon in older age groups despite the current vogue for making this diagnosis. Hypoglycemia has a number of causes some of which are identifiable and others not yet understood. When it occurs in children without diabetes, it is usually due to a prolonged period without food. Thus the treatment is frequent feeding at three hourly intervals during the day and ensuring that there is less than ten hours between evening snack and breakfast. Occasionally hypoglycemia is brought on by specific food intolerance, e.g., fructose. In these cases elimination of certain food substances is highly beneficial. These instances should be diagnosed by specific testing. Hyperinsulinism is a rare but frustrating cause of hypoglycemia. Episodes can occur at any time unrelated to meals. All forms of hypoglycemia should be treated with rapidly absorbed simple sugars. Care should be taken to avoid excessive amounts of food which would result in obesity. This is achieved by spreading out calories rather than increasing total caloric intake. Specific dietary instruction by a qualified nutritionist is usually necessary.

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"Whatsoever was the father of a disease, an ill diet was the mother."
– Proverbs

"There is no finer investment for any community than putting milk into babies."
– Sir Winston Churchill

Involving Children in Food Preparation

A Pathway to Increased Learning and Mastery

BY KAREN VANDERVEN

Despite odors of burnt toast, sticky orange juice spots on the kitchen table, and the inevitable scorched eggy frying pan in the sink, parents who have had special breakfasts in bed prepared by their children have reason to be gratified above and beyond the special thought the children were showing. When children have an active, involved role in food preparation, they are engaged in an activity which is as "good for them" mentally as a nutritious meal is physically.

While there is growing recognition that cooking activity encourages learning (Ferreira, 1973) and that it is increasingly being included in preschool curricula, it has not been utilized as widely as it might be, in view of its benefits, for a number of reasons. Food preparation has traditionally been associated with adults, particularly women; while young children may play in the kitchen while their parents prepare meals, by the time they reach school age there is little consideration of the possibility that they may be ready for more active involvement there. Economic affluence, with labor-saving devices, has reinforced the passivity of children, because they are not needed – in the kitchen or elsewhere – to help perform the work of family and society.

Because there is ample evidence that participation in food preparation can be a very positive activity for children of all ages in all kinds of settings, this paper will describe some of its specific benefits and provide suggestions for encouraging its use.

Food Preparation Encourages Participation

Because food is naturally attractive to most children, their involvement in preparing and serving it can be readily engaged. While for some children's activities a finished product is not of major importance, the knowledge that their efforts will result in a particularly enjoyable result encourages their participation. While many normal children may not need special motivation to play productively, for many atypical children with a sense of inadequacy, the intrinsic attractiveness of an activity, such as food preparation, has great significance in terms of encouraging them to feel comfortable enough to try it. For children who may not hold positive memories and feelings about food, participation in actually preparing it can help them, through exposure, develop new perspectives.

Food Preparation Helps Children Feel Useful

"The three most important needs of children are to be loved, enjoyed, and needed . . . the need to be needed . . . is particularly important. Children want to help, to set the table, to push the elevator button" (L. Koren, quoted in Goertzel, Goertzel & Goertzel, 1978, p. 59). Food preparation is an ideal activity to help children feel useful and needed. Because it involves direct interaction with the people and materials of the environment and results often in a finished product which is meaningful and desirable to others, food preparation is an activity which turns unproductive passivity into productive accomplishment. Being able to make something which receives admiration and gives pleasure can significantly contribute to a child's sense of being useful in the world. In this context, it is important to note that many programs for atypical children are stressing ways of developing competence, in recognition of its crucial therapeutic value.

Food Preparation Develops Ego Functions

While there are a variety of conceptualizations of the processes of personality and cognitive growth in children, the theory of ego functions is one of the most useful for understanding the contributions that activities such as cooking, games, crafts, and sports make to children's overall development.

Ego functions, according to the formulations of ego psychology, are those skills necessary for an individual to understand and relate to

Karen D. VanderVen, Ph.D.: Associate Professor, Department of Child Development and Child Care, School of Health Related Professions, University of Pittsburgh, Pittsburgh, Pennsylvania.

reality and to master his world. They include, among others, identity, perception, motility, body image, frustration tolerance, capacity to experience pleasure, communication, decision making, and ability to imitate (Vander Ven, 1965). A developmentally appropriate, stimulating, and organized external environment is crucial in facilitating the development of these ego functions (Cumming & Cumming, 1962).

Although ego theory, with its grounding in psychoanalytic theory, has been generally applied more to conceptualizing needs of atypical children, it has much to offer also to programming for normal children. In fact, because it focuses on specific areas in which development takes place, it helps avoid the inaccurate generalizations which come from labelling.

Following are ways in which a number of ego functions can be used and developed through children's participation in food preparation activities:

Identity

Cooking has special significance for helping children develop a positive sense of personal identity, of knowing who they are and that they have competencies which are positively viewed by others. A 3-year-old who sees that he can pass napkins around the table, a 5-year-old who stirs the juice, a group of 11-year-olds who plan and make a meal for *their* caretakers, a child in a wheelchair who laboriously but graciously passes the cookies — all of these children, through the sense of accomplishment fostered by the activity, will feel more positive about themselves.

Motility and body image.

Control of one's body motions (motility) and a sense of the boundaries and characteristics (body images) are basic ego functions. These are effectively encouraged by food preparation activities as can be readily recognized by considering the multitude of ways of using the body called into play by them. Stirring, patting, rolling, sprinkling, shaking, and other movements all provide constructive ways of developing increasing awareness of the body and skill in using it.

Perception.

Perceptual ability (being able to accurately organize sensory input from the environment) is obviously an essential ability necessary in order to relate to reality. Perceptual skills develop as children interact with their environment in increasingly complex ways. Atypical children may, either due to the restrictions imposed by the nature of their handicap or due to lack of exposure to adequate stimulation, may have deficits in perceptual abilities. Taking part in food preparation is an ideal way to help create an environment rich in perceptual stimulation and to encourage the use of all sensory receptors. The smells, tastes, sounds, textures, and sights of foods are many and varied. For example, a child who arranges fresh vegetables on a plate or decorates cookies is exposed to a variety of colors and opportunities to discriminate among different textures.

Communication.

The basic human ability to communicate, another ego function, is well supported by food preparation and serving. The earliest communication between parent and child takes place in the context of feeding. As children become older, shared mealtime is a way of bringing families or groups together for social interchange, as any preschool teacher who has convened children around the snack table knows. When the activity has been extended to the point where the children actually plan, prepare, serve, and clean up after their snacks and meals, the communication possibilities are enhanced that much more. When, for example, a nonverbal child offers another person a piece of bread he has helped to make — by helping to stir and roll the dough — his communication paves the way for an appropriate response, and an exchange is begun.

Capacity to experience pleasure.

It has been observed in children with ego deficits that many of them do not have the capacity to experience pleasure or, stated more simply, to have fun or to enjoy the various activities of life. Because of its inherent attractiveness, however, the activity of cooking especially can help such children develop this capacity. Children who do not seem to be responsive to more traditional children's activities may be quite alert when given the opportunity to pour the chocolate bits into the cookie mix, pour the juice, dish up the applesauce; and they show obvious pleasure at their involvement and achievement.

Facilitating Successful Food Preparation Activities

In view of the many benefits which can be achieved through food

preparation activities, it is appropriate to consider ways in which adults can facilitate their success.

Growth Producing Attitudes

First of all, adults can examine those aspects of their feelings about children which may be gratifying for them to hold but which may contribute to their encouraging unproductive passivity in the children. Some adults see very young children as "cute"; this depersonalization makes adults fail to see the needs for experiences which will help children grow in competence. When adults feel pity for atypical children, they may simply want to "give" to them, rather than encourage them to develop the ability to do things for themselves. Feelings like these contribute to the failure of some programs to actively involve children in activities which are actually within their interest and competence.

Adult feelings about neatness and order may sometimes get in the way of their encouraging children to take an active role in "messy" activities like cooking. It is without a doubt less efficient and less neat to have children prepare their own snack rather than have the adults routinely dole it out. A relevant example is in work with institutionalized children. Here, frequently, routines of living, such as meals, are highly structured and generally the children have little role in actively carrying them out. Meals and snacks are provided by a food service department and are served, often cafeteria style, by adult staff. Should, however, the children be more involved in this crucial aspect of their lives, they would truly be developing the self-concept and skills they actually need in order to function in the community. The success that can be achieved by involving children in food preparation is exemplified by the recent report of the turn-around of an unsuccessful high school food service program when the students took over the running of it.

Techniques and Strategies of Activity Programming

Adult knowledge of activity programming techniques – ways of selecting, setting up, and arranging the media with which children work so that the activity can be conducted safely and productively – can prevent the excuse often given for failing to let children try a new, challenging activity: "We tried it once and it didn't work." For example, an adult conducting a cooking activity with a group of children will be aware of the competencies of the children, their self-control and attention span, the amount of time available, the characteristics of the physical environment, the pattern of interaction among the children, the number of adult staff, and similar factors in planning and carrying out the activity.

Thus, for one group the activity at a particular time might be simply passing crackers and juice and collecting napkins, for another, making popcorn, and, for still another, planning and serving a whole meal – buying the food, setting the table, preparing and serving the food, and cleaning up afterward.

In considering the effort involved in helping children in food preparation activities, it is useful to keep Ferreira's (1973) words in mind: "It is well worth the effort to introduce cooking as a daily activity for the returns in enjoyment and learning to child, teacher, and parent." (p. 32).

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More Effective Nutrition Teaching Through a Process Method–

Lifelong Eating Habits Begin Early

BY ANN B. TAYLOR

Through the popular media, research in the past decade has stressed to parents the notion that learning begins at birth and that children are constantly absorbing ideas and using meaningful experiences. Consequently, from birth young children are learning about food – that is, the sources of food and the pleasurable aspects of food. Not necessarily learned, however, is the value of food or the importance of eating the proper foods. Recent research on nutrition has indicated there is a relationship between nutrition and intellectual development and between nutrition and infectious diseases. Therefore, Foster (1972) suggests that food programs should be an important part of early childhood programs mainly because breakfast, lunch, and nutritious snacks may raise a child's resistance to disease and may also help bring about motivational changes by increasing a child's responsiveness to stimuli in the preschool environment. Birch and Grotberg (1972) also suggest that an adequate state of nutrition is necessary for good attention and for appropriate and sensitive responsiveness to the environment.

The growth of research information by nutritionists and educators is causing a new awareness about eating habits in our country. Although many lifelong eating habits are formed at home during the early childhood years, both home and school should include the same strong message to the child concerning good eating patterns. Therefore, in 1970, the staff of the Children's School at Carnegie-Mellon University began to plan a full-day program for kindergarten children. The staff discussed many ways to incorporate a well-organized nutritional program into the curriculum because good nutrition is only good as long as it is practiced. To make nutrition even more functional for young children, it was decided to use the process method to give nutrition real meaning to the child.

The teaching staff had long ago realized the inferiority of a passive modality of learning. They had hypothesized that every kindergarten child could learn a great many lifetime skills if the child were able to be involved in real tasks where goals would be set and the child would have to bring the task to closure. All of the learning in the proposed nutrition program would come about from actively doing the tasks rather than passively observing adults doing the tasks. Thus the process method used throughout the school was organized in fine detail for the nutrition program.

The children plan from the four basic food groups, select favorite foods, prepare marketing lists, and prepare foods for cooking and eating. These real tasks are interdependent and the responsibility for completing tasks is a group process with a teacher supporting and supervising the process in the kitchen. The ratio is usually one adult to four children.

The following responsibilities were included in a four-day nutrition program (lunches are served Monday through Thursday only):

(1) planning hot lunches from four basic food groups
(2) selecting daily duties from the four-day chart
(3) preparing food for lunches
(4) setting tables with trays, silver, napkins, glasses
(5) cleaning tables after first removing trays and food

As the boys and girls plan menus, they learn about the four basic food groups and the importance of milk, meat, fruits, vegetables, and cereals/breads to supply body needs such as carbohydrates, protein, minerals and vitamins. Protein helps with growth and repair of the body; minerals and vitamins help with growth and with keeping the body functioning; and fats and carbohydrates help to provide energy.

Young children are rarely taught in this detailed "process method." Many preschool teachers TALK ABOUT FOOD and/or have a science project about plants needing air and water, but the nutrition teaching described here is the central core of the whole curriculum and has brought together the teach-

Ann Baldwin Taylor: Director, Children School, Coordinator, Early Childhood Teacher Education Program, College of Humanities and Social Sciences.

Reading Task Card. From left to right: Jean Eubanks, teacher; Adam Goldstein; Nicholai Michels; Allison Drash.

ing of process as well as the teaching of nutritional content.

The entire children's school is arranged and divided into learning centers, and the boys and girls are given directions in a very simple task card method. The large cards (or charts) with explicit steps are followed by a picture representation.

Task Card Method

The steps on the task card for the kitchen cooking group illustrated here are the same steps and format for planting seeds in the science learning center, or the same as the steps in the woodwork shop. In other words, wherever the child is, a chart is always at the child's eye level with steps giving concrete directions. The child focusing on each step does not become distracted and miss the process. Teachers constantly reassure the child at each step and talk about the process and the importance of follow-through. Each task is equally recognized at the end as part of the

cooperative effort of the group to produce and to enjoy a delicious and nutritious lunch.

To promote a new nutritional awareness in our schools, public school administrators should exercise their right to insist upon better nutrition for the children. Lunch programs should include natural foods, and teachers should encourage the eating of fresh fruits and raw vegetables instead of offering meals full of refined products and heavy sugar products. The parents and teachers can request that no "junk food" be served in the school cafeteria or in the vending machines. Instead apples, cheese crackers, nuts, and raisins may be substituted. Children are going to be exposed to "junk food" wherever they may be in our society; therefore, important are discussions about choosing the very best from a group (i.e., the choosing of pizza instead of popcorn because of the nutrients offered to the body from pizza).

Very young children upon entering the Children's School program are also involved in the preparation of snacks; as they plan, they are observing and listening to the older children who are carrying out "adult-like" tasks with efficiency and dispatch.

True Nutrition Learning — A Warning to Teachers and Parents

Teachers and parents too easily fall into the trap of believing that a great deal of learning is taking place simply because the children are busy cooking. While it may be true that a child who is engaged in cooking activities is probably learning more than a child who is not, this does not release the parent or educator from the obligation of making all activities function as a means of imparting content and enabling the child to internalize the process. The child who is an enthusiastic participant in nutritional activities may be regarded by the teacher as a child who is learning at an optimum rate. Yet this is not necessarily the same as internalizing a process. A child may be able to give a correct answer without understanding *why* it is correct. The integration of the content and the process requires skill on the part of the teaching staff and effective administration to coordinate the program.

Free education has been a national priority in the struggle to improve the lives of our children. In 1978, most of our 5-year-old children are being offered kindergarten programs. Perhaps in the future we will see glimpses of other priorities for our young children like child health and nutrition as a concern of the total country.

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"In eating, a third of the stomach should be filled with food, a third with drink, and the rest left empty." — The Talmud

"Kitchen Physic (medicine) is the best Physic." — Jonathan Swift

Children's Literature

BY FRAN COHEN

Since food is quite literally the stuff as well as the staff of life, it often has constituted one of the main ingredients in songs, poems, and stories for children of all ages and nationalities. Memories of my childhood include "Pat-A-Cake," "Hot Crossed Buns," "Peas Porridge Hot," Mother Goose rhymes about Humpty Dumpty, Simple Simon, Miss Muffet, Jack Spratt and Little Jack Horner. I grew up with R. L. Stevenson's brown cow, B. Potter's Peter Rabbit and Squirrel Nutkin and the folk tales of *Jack and the Beanstalk, Gingerbread Boy, The Three Bears, The Little Red Hen, Black Sambo, Epamonondas, The Turnip,* and *Stone Soup.* A. A. Milne's many references to food in his poems and Pooh stories are fondly recalled. But, in my childhood home, the kitchen was not looked upon as a suitable play and learning area for me. I was an intruder who might get in the way, spill something, or get hurt. Perhaps most preschoolers at that time were equally restricted. In any case, even if preschoolers were welcomed into the kitchen and allowed to observe and even participate in family food preparation, it seems that only in the last half decade have authors and publishers acknowleged their presence there and come to the realization that young children not only enjoy consuming food and reading stories about food, but have a devouring interest in food facts and can be happily and beneficially involved in food preparation.

The wealth of possibilities for teaching in diverse areas, such as sensory perception and appreciation, manual dexterity, hygiene, self-care, nutrition, basic science, conservation, vocabulary, basic arithmetic, social skills, and ethnic customs, may be unparalleled. Food preparation requires caring, attentiveness, alertness, patience, and the ability to follow directions, to plan, organize, categorize, and remember. Working with food can be a motivating factor for the development of curiosity, imagination, creativity, adaptability, and the acquisition of problem-solving and reading skills. Indeed it would appear that the ideal setting for most of what we are trying to teach young children is the kitchen. It is with this in mind that the emphasis of books reviewed for this issue will be on food activity books.

Fran Cohen, M.Ed.: Pre-Primary Teacher, Rogers School, Pittsburgh, Pennsylvania.

Creative Food Experiences For Children. Goodwin, Mary & Pollen, Gerry. Washington, D.C.: Center For Science In The Public Interest, 1974.

Of all the books about to be reviewed, this one, written for preschool teachers, is the most outstanding for its comprehensiveness, its organization, and its clarity of presentation. I believe that there is no aspect of food to which it does not address itself well. In addition to the wealth of material between its paper covers, it gives us an entire section of more "Sources and Resources." This book is as good a teaching tool as one could wish for.

Cool Cooking For Kids. McClenahan, Pat & Jaqua, Ida. Belmont, California: Pearson Publishers, Inc.. 1976.

Also written for the teachers of young children, a wide range of food facts and activities are presented. Unfortunately, neither the method of presentation nor the ingredients of many of the recipes reflect the concern with lesson plan format (i.e., defined objectives, suggested presentation, specified learning experience, and modes of evaluating and enriching the experiences) and good nutrition. Nevertheless, I think that this book also merits space on the preschool teachers' shelf.

Kids Cooking Without A Stove. Paul, Aileen. New York: Doubleday & Co., Inc.. 1975.

Well organized and helpfully illustrated recipes range from sandwiches and salads to desserts and beverages, none of which require children to use a stove. Each recipe includes a list of utensils needed and has specific instructions as to which activities will require adult help or supervision.

Natural Sweets & Treats. Laughlin, Ruth. Santa Barbara, California: Woodbridge Press Publishing Co. 1975.

Over 300 relatively simple, clearly presented recipes, utilizing "healthful" natural foods are presented.

Love At First Bite. Cooper, Jane. New York: Alfred A. Knopf. 1977.

Most of the over 150 recipes are for something sweet, but a strongly redeeming feature is that white flour and white sugar are not numbered among the recipe ingredients. The recipes are imaginative, easy to prepare, and many do not require heat. (This book is designed for older children).

"Cooking and Snacks" (leaflet 10 of *Creating With Materials for Work and Play*) Mays, Billie. Washington, D.C.: Association For Childhood Education International, 1969.

Excellent pamphlet encourages and helps teachers use food activities with young children.

OTHER FOOD RELATED BOOKS FOR YOUNG CHILDREN

The list of books has been divided into categories which are listed below. The number in parentheses following the credits indicates a corresponding category.

Key:
1 Sensory Appreciation and Attitudes
2 Origins and Preparation
3 Facts
4 Fantasies and Folk Tales
5 Customs and Manners
6 Celebrations
7 Alphabet
8 Counting
9 Poems or Rhymes

Aliki. *The Story of Johnny Appleseed.* New Jersey: Prentice Hall, Inc., 1963. (2,3)

Baldwin. *Sunflowers for Tina.* New York: Four Winds Press, 1970.

Bannerman, H. *Little Black Sambo.* New York: J. B. Lippincott, 1938.(4)

Begley, E. *My color game.* Wisconsin: Whitman Publishing Co., 1966.(1)

Barenstain, J. *Little Bear's pancake party.* New York: Lothrop, Lee & Shepard, 1966. (1,6)

Barenstain, J. & Berenstein, S. *The big money hunt.* New York: Random House, 1962.

Brock, E. *To market, to market.* New York: Alfred A. Knopf, 1930. (2,3)

Brown, M. *Big red barn.* Reading, Mass.: Addison-Wesley Publishing Co. 1965. (2,3)

Brown, M. *Nibble, nibble.* Reading, Mass.: Addison-Wesley Publishing, 1965.

Brown, M. *Stone soup.* New York: Charles Scribner's Sons, 1961. (1,2)

Buckley, H. *Some cheese for Charles.* New York: Lothrop, Lee & Shepard, 1963.

Carle, E. *Pancakes, pancakes.* New York: Alfred A. Knopf, 1970. (1)

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Domanska, J. *The turnip.* New York: Collier Books, 1969. (2,3,4)

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Hawes, J. *Watch honey bees with me.* New York: Thomas Y. Crowell, 1964. (2,3)

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Hoban, R. *Bread and jam for Frances.* New York: Harper & Row, 1964.

Hoban, R. *Dinner at Alberta's.* New York: Thomas Y. Crowell Co., 1975. (3)

Hoban, R. *Egg thoughts.* New York: Harper & Row, 1964. (1,2,3)

Hogrogian, N. *Apples.* Riverside, New Jersey: Macmillan, 1972. (2)

Hulick, N. *A day at the farm.* New York: Golden Press, 1960. (2)

Kahl, V. *The Duchess bakes a cake.* New York: Charles Scribner's Sons, 1955. (2,4)

Kahl, V. *The Perfect pancake.* New York: Charles Scribner's Sons, 1960. (2,4)

Koshland, E. *The magic lollipops.* New York: Alfred A. Knopf, 1971. (4)

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Krauss, R. *The carrot seed.* New York: Scholastic Book Service, 1971. (2,3)

Lasker, J. *Lentil soup.* Chicago: Albert Whitman & Co., 1977.

Lensky, L. *Let's play house.* New York: Henry Z. Walck, Inc. (3,5)

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Potter, B. *The tale of Peter Rabbit.* London, England: F. Warne & Co., Ltd., 1903. (1,4)

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Sendak, M. *Chicken soup with rice.* New York: Harper & Row, 1962. (2,9)

Sendak, M. *In the night kitchen.* New York: Harper & Row, 1970.

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Stevens, C. *How to make possum's honey bread.* New York: The Seabury Press, 1975. (2,3)

Tester, S. *I'm a big helper.* Elgin, Illinois: David C. Cook Publishing Company, 1963. (1,3,5)

Tensen, R. *Come to the farm.* Chicago: Reilly and Lee Co., 1949. (2,3)

Thompson, E. *What shall I put in the hole that I dig?* Racine, Wisc.: Western Publishing Co., 0000. (1, 2,3)

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Every Day We Grow-I-O. Children's Record Guild, New York: William P. Scott, Inc., Publisher. Division of the American Recording Society.

Silly Willy. Children's Record Guild. New York: William P. Scott, Inc., Publisher. Division of the American Recording Society.

Singing In the Kitchen With Clementine. Children's Record Guilt, New York: William P. Scott, Inc., Publisher. Division of the American Recording Society.

The Carrot Seed. Children's Record Guild. New York: William P. Scott, Inc., Publisher. Division of the American Recording Society. (2,3)

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Community Intervention in Federal Nutrition Programs

BY MARY ELLEN LLOYD

A food program that is funded by federal legislation can be a good program *only* if there is community intervention. Why? Because if the community intervenes to see if the food is well prepared, if it is reaching all the people that need the meal, if the people are eating the food, then the program is meaningful. The food program belongs to the community. Community people are making the program work for them, and tax dollars appropriated for food programs are then wisely used.

What are specific ways in which the community intervenes? In 1946 legislation was passed that instituted the National School lunch program – a lunch at noon for our school children. Depending on family income, a child would pay full price, a reduced price, or receive the meal free. The meal had to conform to certain menu requirements so that the child received one third of the required dietary allotment of food for the day. The regulations for kinds and amount of food are very precise:

a) Two ounces of lean meat, poultry or fish; or two ounces of cheese; or one egg; or one cup of cooked dry beans or dry peas; or four tablespoons of peanut butter; or an equivalent of any combination of these foods.

Mary Ellen LLoyd, Co-Chairperson, Pennsylvania Coalition on Food and Nutrition, Nutritional Development Services, 222 North 17th Street, 13th Floor, Philadelphia, Pennsylvania 19103

School Breakfast, Ludlow School, Philadelphia, Pennsylvania

b) Vegetables and fruits: 3/4 cup of two or more vegetables or fruits or both.
c) Bread: one slice of whole-grain or enriched bread; or a serving of other bread such as cornbread, biscuits, rolls, muffins, made of whole-grain or enriched meal or flour.
d) Fluid Milk: one-half pint of fluid milk as a beverage.

These specific foods and amounts provide the protein, vitamins and minerals as well as fats and carbohydrates that a child needs. The size portion should change as the child becomes older. I saw an example of size portion when I made a visit in the spring of 1977 to the Pittsburgh Public School District Commissary where they were baking the hamburger rolls for the school children. There was a definite difference between the size for the grade school boys and girls and the high school students! *Only* when this balanced diet is served will government funds be contributed to pay for the meal. Commodity foods from glutted farm markets are purchased by the United States Department of Agriculture to support the food program and the marketing value of farm produce. A lunch program can exist when there are specific diets, specific portions of food, specific commodities that can be used in the menus, and actual cash reimbursements to each school program.

How does the community intervene in this program? Ask yourselves these questions:

a) Does your school, public or private, have a lunch program?
b) If your answer is "no," make an appointment with the school principal and ask why.
c) If your answer is "yes" ask to visit the program. Pay an adult

price for a meal and see if the food is well prepared.

d) See if the children are wasting any food.

e) Ask for a menu to see if the meals are conforming to the dietary regulations set by the USDA.

f) Ask the principal if notices go out at least twice a year to invite families to enroll their children in the program and also give the opportunity for a family to adjust the family income on the certification sheet. Loss of jobs or heavy medical bills can adjust family incomes so that children might receive their meals free of charge.

All of this community intervention shows a child that you care that he has food, that the food tastes good, and that it is good for his health. Consciously or unconsciously he is learning to eat a balanced diet of fruit, vegetables, meat, milk, and bread. The beginnings of nutrition education are a part of this child's growing and eating.

The School Breakfast Program came into reality in additional legislation in 1966. Specific menu requirements are necessary for federal financing of this program: milk, fruit or juice, cereal or bread for each breakfast meal. The School Breakfast Program serves only one tenth of the boys and girls that receive lunch at school. It has not expanded because there seem to be implications that parents should provide breakfast for their children. Why come to school to eat breakfast? Many homes, however, *can't* provide breakfast or at least not a full breakfast. Many boys and girls in rural areas or large cities ride an hour or two to consolidated or magnet schools, and they are ready for a breakfast supplement when they arrive at school. The "good times" of eating together are part of the fun and education of school.

To have a School Breakfast Program in your school *almost always* requires community intervention. The question of surveying a school population to see if families want the program creates a need for community intervention.

Summer Feeding Programs are extensions of school lunch and breakfast programs. They are reimbursed to feed children in summer recreation programs, vacation church schools, camps, and conferences.

The Women, Infants, and Children Special Supplemental Feeding Program (WIC) cares for pregnant women, infants, and children under five years of age with medical care, a special nutritive food package and nutrition education. The foods: milk, cereals, juices, eggs, cheese and infant cereals, juices and formula (if necessary) are specially selected to give the mothers and children a caloric intake of protein and vitamins needed to combat iron anemia and to insure full brain growth. This program needs to be in every county and large city in the land so that our children get a fair start in life. Many of our school children are not suffering from laziness but from a lack of motivational skill due to insufficient brain growth. If mothers are not eating well the last two or three months of pregnancy and if an infant doesn't get enough to eat the first six months of his life, the motivational skills to learn, to play, and to prepare for a full life are missing. Many children going into our day care and preschool programs should be referred to the WIC program. Community intervention creates outreach for a program in your town or county clinic.

Child care programs also have federally funded reimbursements for their meals and snacks if the programs are licensed. There is much personal savings to a family and to a day care home if it is licensed for these programs. Community intervention can find these homes, help get them licensed or introduce them to the federally funded food programs that they need for the children.

Food programs extend to food stamps for the whole family and to congregate feeding programs for our senior citizens – all ways to share and care for our citizens.

Anytime we hear a reference to high mortality rates for infants, or children going to the school nurse complaining of headaches and stomach aches in mid-morning, or children going to school eating bags of potato chips, we can guess that the community where these children and adults live is one that does not have our food programs provided by the abundant crops from our American farms.

Child nutrition legislation has been written this year that is more directive and responsive to nurtition education as it relates to our eating. Meals at school or in our day care homes and in our summer programs are the laboratories for real study of nutrition – what we eat, how good it makes us feel, and how healthy we can be if we eat well and wisely.

What federally funded food programs do you know about? Community intervention in federally funded food programs gives us as citizens a "springboard" to share and care for the members of our community and to undergird the farm economy of this country.

For more information on Federally Funded Food Programs, contact at the state level:

Chief/Director/Coordinator
Food and Nutrition
Department of Education
(Your State Capital)

Chief/Director/Coordinator of WIC Program
Department of Health and Welfare
(Your State Capital)

Pennsylvania:

Warren Vann, Chief
Food and Nutrition
Department of Education
Box 911 – Room 528
Harrisburg, Pennsylvania
(Phone: 717-787-1415)

Mary Ann Britton, Coordinator
WIC Program
Department of Health and Welfare Building
Room 604
Harrisburg, Pennsylvania 17120
(Phone: 717-783-1289)

DIRE HEALTH CONSEQUENCES OF TELEVISION ADVERTISING AIMED AT CHILDREN

BY MOLLY PAUKER

Television is a dominant and pervasive element in American society, especially in the lives of young children. The average American child watches 27.7 hours of television a week (Nielsen, 1977) and views about 20,000 commercials a year (FTC Staff Report, 1978). Of the products advertised to children, 57.6% are edibles, primarily candy and sweets, cereal, and snack foods. Of all the food advertised, 65% is sugared. Only 2% of food advertisements are for items such as milk, poultry, butter, eggs, and vegetables (Barcus, 1977). By the time a child graduates from high school, he or she will have spent 15,000 hours in front of the television set and 11,000 hours in the classroom (Kaye, 1974). He or she will have viewed 350,000 commercials (Friedland, 1975).

TV commercials are very effective in turning children into surrogate salespeople of products to their parents. In one study, 87% of preschool children asked for food items seen on TV (Lyle & Hoffman, 1972). Galst and White (1976) found that the number of product requests made by preschool children accompanying their mothers to the supermarket was positively related to the amount of television watched. Cereals and candy were the most frequently requested items. However, the evidence suggests that very young children are unable to distinguish between programs and commercials, and other children do not understand the selling intent of advertising (Blatt, Spencer & Ward, 1971; Ward, Reale & Levinson, 1971; Ward & Wackman, 1973).

Advertisers spend over $600 million a year pitching products to children who do not even understand what an advertisement is (Broadcasting, 1978). On the other side of the ledger, close to $5 billion is spent yearly on dental repair in this country. According to Nizel (1974), 98% of all Americans suffer dental cavities. Sugar has been implicated as a leading cause of dental caries (Carlos, 1973). Along with tooth decay, obesity is reaching epidemic proportions in this country. More and more children are found to suffer from obesity (National Center for Health Statistics, 1977). In addition, excess weight has been related to other serious nutrition and health problems, including cardiovascular disease and diabetes (Mayer, 1975).

As a matter of public policy, our laws have long protected children from choices they are ill-equipped by age or experience to make. This is why children may not marry, work, seek and hold public office, drive cars, purchase liquor or cigarettes, work full-time jobs, or quit school before a certain age. The cut-off ages may be arbitrary in certain cases, but a clear societal predilection for allowing children to develop and grow and learn gradually before they are treated as adults is apparent. It is incongruent that TV advertisers are permitted to seek to persuade children to choose products and develop consumption habits which may have serious and lasting consequences for their health. TV commercials do not provide two-sided assessment of the possible risks involved in over-consumption of highly sugared foods. Young children are unable to balance the short-term pleasure against the long-term risks such consumption habits pose; it takes a certain amount of cognitive sophistication to realize that a candy bar today may contribute to a cavity in a year or two and then to decide whether the immediate pleasure is worth the possibility of future pain. Our laws have long protected *adults* from advertising which deceives them. These same protections should be applied to the child audience, with an understanding of children's cognitive capacities.

The Federal Trade Commission, mandated to regulate unfair and deceptive advertising, has initiated an 18-month investigation of television advertising directed at children. The proceeding will include written submissions, hearings, and research. The Commission staff has proposed several rules designed to remedy the commercial exploitation of the very vulnerable child

Molly Pauker, J. D. General Counsel: Staff, Action For Children's Television, Newtonville, Massachusetts.

audience. These are prohibition of all advertising on television shows for which the audience is composed of a significant proportion of children aged 2-8; prohibition of advertising of highly sugared foods which pose the most serious dental risks on television shows in which the audience is composed of a significant proportion of children aged 2-12; and corrective advertising to balance commercials for other sugared foods (i.e., "health" and "nutrition" countercommercials).

The FTC has solicited public comment on the above proposals and others, including limitation on the number of commercials directed at children and on the techniques used to advertise to children. Public participation in the Children's Advertising Rulemaking not only affords a unique opportunity for concerned citizens to make their views known to the Commission but it also ensures the basic fairness of the proceeding by providing a forum to offset the expensive and elaborate presentations the broadcasting, advertising, sugar and cereal industries will make. Write:

Presiding Officer
Children's Advertising Rulemaking
Federal Trade Commission
Washington, D.C. 20540

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FOOD SUPPLY - USA

BY BARBARA B. DESKINS

The United States is among the most affluent nations in the world, and this affluence includes an abundant food supply. It should be realized, however, that this generous food supply is not distributed equally among the population, and the United States was shocked to learn, in 1969, from a report by the Citizen's Board of Inquiry into Hunger and Malnutrition, that pockets of malnourished people existed amid affluence. Federal food programs such as food stamps, school feeding programs, and supplemental feeding programs have been implemented to help alleviate this disparity.

In recent years, it has been the quality of the food supply in the United States that has been under severe attack from consumer groups who feel that the nutrient quality of food has diminished over the years, that the nutrients are being processed out of foods, and that chemical substances are being added by the food manufacturers which render foods injurious to health. There have been so many attacks on the safety of the food supply in the United States that many people are becoming increasingly concerned about the quality of food available.

Barbara B. Deskins, Ph.D.: Nutritionist, Maternity & Infant Care Project, Allegheny County Health Department, Pittsburgh, Pennsylvania

How justified are these concerns? First of all, if we compare the health of our population now to the health status of 50 years ago, we find that the major nutritional deficiency diseases have almost completely disappeared. In 1967, health statistics showed only 13 cases of pellegra, 10 cases of rickets, no scurvy, and almost no goiter (Labuza, 1977). In terms of growth patterns, the current generation is now considered to be close to its growth potential. Leveille (1978) states, "Any notion that a return to the diet of the past would improve the well-being of Americans is nostalgic nonsense" (p. 7).

It is true that the composition of the diet has changed in the past 50 years and that these shifts do have implications for the health of the public. In the early part of the century, the American diet was based largely on starchy cereal grains, a moderate intake of meat and fat, and a few processed foods. Today, the Americans as a whole consume diets that are high in fats, sugar, and refined foods, low in raw fruits, vegetables and cereal products, and much higher in meat and poultry. We eat more snack and convenience foods, and the number of meals eaten away from home is at an all time high.

Does all this mean deterioration in the quality of the food supply? As the transportation network has expanded, the variety of foods which are found in the local grocery stores has increased tremendously. But to make these foods available, there must be processing. Food as it comes from the farm is subject to damage either through spoilage or deterioration. Therefore, most foods need to be preserved in some way so they can travel from the place where they are produced to the table where they are eaten. Techniques such as canning, freezing, refrigeration, and drying all prolong the shelf life of food. While these processing techniques may decrease the amount of certain nutrients slightly, careful handling, both in the processing plant and in the home, can minimize these losses.

Food processors often add small amounts of a variety of substances to food in order to change the food in some way. These substances are referred to as intentional food additives and serve many purposes. Some of them, such as salt and vinegar, extend the shelf life of the food by discouraging microbial growth. Others are flavoring substances, such as sugar and spices. Some additives are nutrients. When bread, flour, or pasta products are labeled as "enriched," they have had restored four of the nutrients which were removed during the milling process: thiamin, riboflavin, niacin, and iron. If the food is labeled "fortified," this indicates that some nutrient or nutrients, not normally present in that food, have been added by the manufacturer. For example, milk is usually forti-

fied with vitamin D and salt with iodine. The list is very long, and the amounts and kinds of substances that can be added to foods are carefully controlled by the Food and Drug Administration. Even substances on the GRAS (Generally Recognized as Safe) list, are undergoing review, and the FDA has recently removed such items as cyclamates and Red Dye #2. Unintentional food additives such as pesticides are also carefully monitored by government agencies to prevent accumulation in the food d supply.

An area of current concern relates to the association of some naturally occurring compounds and synthetic food additives to hyperkinesis or "hyperactivity" in children. In the search for an effective treatment for this ill-understood disorder, an hypothesis put forth by Feingold (1975) has received much attention. He hypothesized that hyperkinesis is caused by an allergic reaction of the central nervous system of the child to salicylates as well as artificial flavorings and colors added to foods. Based on this, he proposed an exclusion diet for the treatment of hyperkinetic children which omits not only colorings and flavorings but also a group of highly nutritious foods which contain salicylates naturally.

Many scientists have been critical of Feingold's work because of the lack of scientifically designed studies to support his conclusions. Therefore, several independent research teams conducted studies under controlled conditions. On the basis of their findings, the National Advisory Committee on Hyperkinesis and Food Additives (1977) concluded that artificial food colorings in the diet do not substantially aggravate the behavior of hyperactive children. However, they did suggest that further work be done in this area before definitive conclusions are reached.

All of this should reassure consumers about the quality of the food which is available to them. It does not mean, however, that there are no problems in terms of the food we eat. To be well nourished, it is important to eat a variety of foods daily from each of the different food groups. However, if the foods chosen do not supply the daily nutrient needs of children and adults, then no matter how wholesome the food, it cannot be called nourishing. Thus, educating consumers to make wise food choices from the wide variety of foods available becomes of utmost importance.

That wise food choices are not always made is evidenced by several health problems that exist in this country. Dental caries are prevalent, and it is known that sugar can contribute to their formation. However, the contribution is not so much in the amount of sugar consumed but rather in the form. Sticky candies tend to remain in contact with the dental enamel for a long enough period of time to provide a medium of growth for the microorganisms responsible for the initiation of caries.

Sugar is often identified with obesity, another health problem of significant proportion in the United States. Again, sugar itself does not cause obesity although the average person consumes 102 pounds each year. Rather, it is a low nutrient density food contributing calories to the diet without any of the other necessary nutrients. For those who need to control calories to avoid obesity, lowering the sugar content of the diet seems desirable. Restricting the amount of sugar given to children is wise so they will not develop a taste for sweetness which may make calorie control difficult later in life. The problem of obesity also suggests that diets should contain less fat since this is the most calorically dense component of our diets.

Anemia, which is related to inadequate dietary iron, is prevalent among preschool children and again suggests the importance of providing foods of high nutrient density for children, particularly those which are good sources of iron.

In conclusion, it can be said that both the quality and the quantity of the food supply in the United States are excellent. It is this very abundance of wholesome food, along with foods of low nutrient density, that make it imperative for consumers to be educated about wise food choices. This is expecially important in the case of growing children as the food habits that are formed during this period will be with them the rest of their lives and should promote good health.

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Their Dismal Condition:
Nutrition and Young Children in the Developing World

BY JOHANA DWYER

In the poor countries of the world, young children are often in dismal nutritional condition. Wray (1975) states that there are over 400 million children under 5, some 16.5 million, or 4%, who die each year. In contrast, the rick countries of the world have 96 million children, but only 470 thousand or only about a half of one percent of them die annually. Thus a child born in a poor country has roughly 8-10 times a greater chance of dying before age 5 than do those in rich countries. What causes the difference? Two major problems stand out. First come diseases, particularly diarrheal and respiratory infections, which are the leading causes of death in most of the poor countries. Second comes malnutrition, which is estimated to be associated with or the primary cause in half of all deaths of those in developing countries under 5 years of age. As better means for preventing and treating malnutrition and infectious diseases are found, we can expect more children in the poor countries of the world to live longer and better lives. Nutrition and health workers in developing countries are trying to do just this. By incorporating these and other principles such as family planning in the same programs it will be possible to improve the overall health of children and their families. Political issues affect the quality and quantity of food children receive in these developing countries and are thus very much involved in determining their overall nutritional and health status. We will briefly review these issues and then turn to the positive steps which are now being taken to do nutritionally better by the world's children.

Economic Growth, Food, and Nutrition Considerations

In relation to world population growth, Dwyer and Mayer (1975) state that food production has improved somewhat in the past few years. Yet even optimistic economists estimate that these advances have not been large enough or distributed in such a manner so that the world's nutrition problems have been solved. As a matter of fact, experts estimate that proportionately more, rather than less, of the world's population today get less needed food than it did a decade ago.

In part this is due to slow economic growth, particularly in food production, and maldistribution at the national level. Nutritional improvement is more likely when increases in food production, better distribution of income, better employment opportunities, improved wages, and nutrition education are widely shared throughout the society and particularly among the poor, who are subject particularly to the ravages of under and malnutrition. That is, distributive justice and social welfare measures may make two countries which equal each other in such indices as gross national product very different in respect to the degree to which their populations suffer from malnutrition. Fortunately a number of countries are now coming to the realization that economic growth alone is not enough, and measures which allow all sectors of society to share in the fruits of greater productivity and better lives are more in order.

A second reason that world malnutrition may be on the rise even though world food production is increasing is that there is also maldistribution of food and other resources within families. Often women and children are last in line at the family table and receive lower quality as well as less quantity of food, although their needs, on a strictly pound for pound basis, are higher than that of others. Thus power and politics both within and outside of families, inasmuch as they affect the distribution of what there is to eat, may have detrimental effects upon the nutrition of children.

Also deserving mention is the maldistribution of health, education, and other services which governments deliver to their citizens, the bulk of which go to city dwellers in most developing countries. And,

Johanna Dwyer, D.Sc.: Director, Frances Stern Nutrition Center and Associate Professor, Department of Medicine and Community Health, Tufts University Medical School, Boston, Massachusetts

most unfortunately, many government leaders fail to understand that a whole variety of actions in many cabinet departments or ministries (e.g., health, education, agriculture, treasury), may affect child nutritional status, not simply those few small programs which are expected to do so. Indeed, any action, either planned or unplanned, which alters the need for nutrients, supply and demand of food (or factors which determine food consumption such as income and price) or production can ultimately affect child nutritional status. Hence comes the need for politicians in all countries to give more attention to nutritional concerns in national planning, with special consideration to measures which may be taken to assure that the needs of vulnerable groups such as children are met.

Since all too often children are at the bottom with respect to getting the attention they deserve in things nutritional, many developing countries need to be constantly urged to do something about their sad situation.

International organizations such as UNICEF, World Health Organization, World Bank, and the Food and Agriculture Organization of the United Nations are presently providing planning and technical assistance to help developing countries do this. Bilateral aid groups such as our own country's Agency for International Development and many of the northern European countries have also been active, aided as well by the worthy efforts of church and voluntary groups.

New Directions

Bengoa (1974) and Dwyer (1975) state that the results of many research studies and several decades of effort in a number of countries suggest that several areas deserve particular emphasis.

Support of primary health services. This refers to basic health care, such as immunizations, nutrition education, family planning, maternal and child health, and environmental sanitation. More and more we see that feeding programs alone without these other supportive health and environmental improvement efforts can do relatively little to improve nutritional status. Very simple measures which are so much the part of life in the richer countries of the world that they are regarded as usual can do much to break the vicious cycle of malnutrition and infectious disease feeding upon each other and worsening health status. Intelligent persons with little formal education can be taught to deliver these services and to help members of the community incorporate these measures into their own lives. Therefore, basic decentralized health services, particularly for the rural and urban poor, are of great importance. Several very specific nutrition issues need to be dealt with by these workers. They include extensive efforts to help young mothers understand the importance of breast feeding, the preparation of weaning foods using available resources, development of nutrition rehabilitation centers and routine weighing of children to reduce the prevalence and to ultimately prevent protein-calorie malnutrition, and simple measures for recognizing and dealing with dehydration.

Many of the most prevalent forms of malnutrition are amenable to prevention by mass measures. They include blindness due to vitamin A deficiency, goitre, iron deficiency anemia, and severe protein-calorie malnutrition. Fortunately it is within the means of almost all governments to attack and make a dent in these specific syndromes, even if the general improvement of the overall state of nutrition must await greater overall development.

Development of locally effective nutrition education programs. These are likely to involve at least two of the following three components: health, education, and agriculture. More coordination of the efforts and advice given by local health centers, schools, and agriculture extension services would be helpful in rural settings. In low income districts of cities, nutrition and consumer education programs need to be melded with health and

formal education systems more closely.

Preparing for and better dealing with mass nutrition emergencies. In famines and other disasters, children are the most likely to suffer. Politicians who are by nature optimists often fail to provide for such an eventuality by advance planning, which could ameliorate its worst effects.

How Citizens in Rich Countries Can Help

The inhabitants of wealthy countries are in a particularly favorable position for improving the lot of the poor in developing countries. They can do this by (a) advocating that their own governments provide for the nutritional well being of all citizens, (b) urging foreign aid programs with particular emphasis on those which speak to the problems of the rural and urban poor in developing countries by advocating such measures to their governments, (c) contributing to voluntary and international organizations such as UNICEF which are particularly concerned with the nutrition of children, (d) urging multinational corporations which produce foods fed to infants and children to go further with their efforts to make sure that their marketing techniques are ethical and that they work harder to ensure such foods are used appropriately, (e) fostering healthful food consumption practices in their own families and in their own lives, and (f) developing greater awareness of the problems of malnutrition in the developing world. The American Association of University Women currently has a study program on this topic. Other reliable sources of information include UNICEF, The United Nations, New York, the Agency for International Development, Department of State, Washington, D.C., Project HOPE, the publication CONCERN of the World Council of Churches, Catholic Relief Services, and the American Joint Distribution Society.

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POEM

Nutrition is . . .

Food, first of all
yet much more.
It is the sum
of all the ways
our bodies use
the food we eat.

Nutrition, some say,
is a process,
a science, a state,
a study, a discipline—
depending on who
tries to define it.

Nutrition is
a complex marvel
of life-chemistry that
transforms food from meals
(yes, snacks too)
into living cells—into you.

Nutrition, too, is
people and meanings—
our food beliefs,
our customs, taboos,
notions, fears,
mold what our nutrition is.

Nutrition is
bound to life—
to health and hope,
to growth and healing,
to hunger and suffering,
to joy and vigor—
But always, to being alive.

— Eleanor Morritt Urenos

This poem appeared in the *Nutrition Source Book* published by the National Dairy Council. Permission to reprint this poem was granted by the Nutrition Education Division of the National Dairy Council.